Curriculum Map: Algebra 2 2019-2020

Course: ALGEBRA 2 Sub-topic: Algebra

Grade(s): 9 to 12

Unit: Unit 1: Foundations for Functions

Month: September

Skills:

-Apply transformations to points and set of points

-Interpret transformations of real-world data

-Fit scatter plot data using a linear models with or without technology

-Use linear models to make predictions

Essential Questions: How do you apply transformations to points and linear functions?

Content:

-Transform data points and linear functions

-Identify the parent function

-Find the line of best fit for the data

Vocabulary:

-Transformation

-Translation

-Reflection

-Stretch

-Compression

-Parent Function

-Regression

-Correlation

-Line of Best Fit

-Correlation Coefficient

Resources: Holt McDougal Algebra 2 Common Core Edition

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.1 (Advanced)	Use the concept and notation of functions to interpret and apply them in terms of their context.
CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.4 (Advanced)	Interpret the effects transformations have on functions and find the inverses of functions.

Topic: Lessons 1-3: Exploring Transformations

Minutes for Topic: 120

Core Lesson Description: Apply transformations to a set of points on a graph.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Apply transformations to a set of points

2) **(I)** Interpret transformations of real-world data

Topic: Lessons 4-5: Introduction to Parent Functions

Minutes for Topic: 80

Core Lesson Description: Identify the parent functions from graphs and equations.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Identify the parent function from a graph and an equation

Topic: Lessons 6-9: Transforming Linear Functions

Minutes for Topic: 160

Core Lesson Description: Transform linear functions by using reflections, translations, and stretches or compressions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Transform linear functions

Topic: Lesson 10-12: Curve Fitting with Linear Models

Minutes for Topic: 120

Core Lesson Description: Make predictions about a scatter plot using a linear function.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Fit scatter plot data using linear models

2) **(I)** Use linear models to make predictions

Topic: Lessons 13-14: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review all topics from the unit

Unit: Unit 2: Quadratic Functions

Month: September-November

Skills: -Transform quadratic functions from the parent function

-Describe the effects of changes in the coefficients of a quadratic function in vertex form

-Define, identify and graph quadratic functions

-Identify and use maximums and minimums of quadratic functions to solve problems

-Factor trinomials

-Solve quadratic equations by graphing or factoring

-Determine a quadratic function from its roots

-Solve quadratic equations by completing the square

-Write quadratic equations in vertex form

-Define and use imaginary and complex numbers

-Solve quadratic equations with complex roots

-Solve quadratic equations using the Quadratic Formula

-Classify roots using the discriminant

-Solve quadratic inequalities using tables and graphs

-Solve quadratic inequalities using algebra

-Perform operations with complex numbers

Essential Questions: How do you graph, solve, and apply quadratic functions?

Content:

-Graph quadratic functions in vertex and standard form

-Solve quadratic functions by factoring, completing the square, and using the quadratic formula

-Simplify and perform operations with complex numbers

-Solve quadratic inequalities

Vocabulary:

-Quadratic Function

-Parabola

-Vertex of a Parabola

-Vertex Form

-Axis of Symmetry

-Standard Form

-Minimum Value

-Maximum Value

-Zero of a Function

-Root of an Equation

-Binomial

-Trinomial

-Completing the Square

-Imaginary Unit

-Imaginary Number

-Complex Number

-Real Part

-Imaginary Part

-Complex Conjugate

-Discriminant

-Quadratic Inequality

-Quadratic Model

-Quadratic Regression

-Complex Plane

-Absolute Value of a Complex Number

Resources: Holt McDougal Algebra 2 Common Core Edition

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.1 (Advanced)	Apply and extend the properties of exponents to solve problems with rational exponents.
CC.2.1.HS.F.2 (Advanced)	Apply properties of rational and irrational numbers to solve real world or mathematical problems.
CC.2.1.HS.F.6 (Advanced)	Extend the knowledge of arithmetic operations and apply to complex numbers.
CC.2.1.HS.F.7 (Advanced)	Apply concepts of complex numbers in polynomial identities and quadratic equations to solve problems.
CC.2.2.HS.C.1 (Advanced)	Use the concept and notation of functions to interpret and apply them in terms of their context.
CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.4 (Advanced)	Interpret the effects transformations have on functions and find the inverses of functions.
CC.2.2.HS.C.5 (Advanced)	Construct and compare linear, quadratic, and exponential models to solve problems.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.
CC.2.2.HS.D.4 (Advanced)	Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs.
CC.2.2.HS.D.5 (Advanced)	Use polynomial identities to solve problems.
CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 1-3: Using Transformations to Graph Quadratic Functions

Minutes for Topic: 120

Core Lesson Description: Use transformation to graph quadratic functions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Transform quadratic functions

2) **(E)** Describe the effects of changes in the coefficients of the quadratic function in vertex form

Topic: Lesson 4-6: Properties of Quadratic Functions in Standard Form

Minutes for Topic: 120

Core Lesson Description: Use properties of quadratic functions in standard form to graph, find the minimum or maximum and solve real world problems.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Define, identify, and graph quadratic functions

2) **(E)** Identify and use maximums and minimums of quadratic functions to solve problems

Topic: Lesson 7-10: Solving Quadratic Equations by Graphing and Factoring

Minutes for Topic: 160

Core Lesson Description: Solve quadratic equations by graphing and factoring.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Solve quadratic equations by graphing or factoring.

2) **(E)** Determine a quadratic function from its roots.

Topic: Lesson 11 and 12: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review of the first 3 topics:

Graphing quadratic functions

Writing a quadratic function in vertex and standard form

Solving a quadratic equation by graphing or factoring

Topic: Lesson 13-15: Completing the Square

Minutes for Topic: 120

Core Lesson Description: Complete the square to write quadratic functions in vertex form.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Solve quadratic equations by completing the square

2) **(E)** Write quadratic equations in vertex form

Topic: Lesson 16-18: Complex Numbers and Roots

Minutes for Topic: 120

Core Lesson Description: Simplify complex numbers and roots.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Define and use imaginary and complex numbers

2) **(E)** Solve quadratic equations with complex roots

Topic: Lesson 19-22: The Quadratic Formula

Minutes for Topic: 160

Core Lesson Description: Use the quadratic formula to solve quadratic equations.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Solve quadratic equations using the Quadratic Formula

2) **(E)** Classify roots using the discriminant

Topic: Lesson 23 and 24: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review of topics 4-6:

Completing the square

Simplifying complex numbers and roots

Using the quadratic formula to solve a quadratic equation

Topic: Lesson 25-28: Solving Quadratic Inequalities

Minutes for Topic: 160

Core Lesson Description: Solve and graph quadratic inequalities.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Solve quadratic inequalities by using tables and graphs

2) **(E)** Solve quadratic inequalities by using algebra

Topic: Lesson 29-31: Curve Fitting with Quadratic Models

Minutes for Topic: 120

Core Lesson Description: Write a quadratic equation to fit the curve.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Use quadratic functions to model data

2) **(I)** Use quadratic models to analyze and predict

Topic: Lesson 32-34: Operations with Complex Numbers

Minutes for Topic: 120

Core Lesson Description: Perform operations with complex numbers.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Perform operations with complex numbers

Topic: Lesson 35 and 36: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review of topics 7-9:

Solve quadratic inequalities by tables, graphs, and algebra

Write a quadratic equation to fit a curve

Perform operation with complex numbers

Topic: Lesson 37-40: Review and Assessment

Minutes for Topic: 160

Core Lesson Description: Review all topics from the unit

Unit: Unit 3: Polynomial Functions

Month: November-February

Skills:

-Identify, evaluate, add, and subtract polynomials

-Classify and graph polynomials

-Multiply polynomials

-Divide polynomials

-Factor polynomials

-Identify the multiplicity of roots

-Use Rational Root theorem to solve polynomial equations

-Use the Fundamental Theorem of Algebra and its corollary to write polynomial equations

-Use the properties of end behavior to analyze, describe, and graph polynomial functions

-Identify local maxima and minima of a polynomial function

-Transform a polynomial function

Essential Questions: How do you solve and graph problems with polynomials?

Content:

-Simplify expressions with polynomials

-Find the rational and irrational roots of a polynomial

-Graph polynomials using transformations

Vocabulary:

Monomial

Polynomial

Degree of a Monomial

Degree of a Polynomial

Leading Coefficient

Binomial

Trinomial

Polynomial Function

Synthetic Division

Multiplicity

End Behavior

Turning Point

Local Maximum

Local Minimum

Resources: Holt McDougal Algebra 2 Common Core Edition

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.4 (Advanced)	Interpret the effects transformations have on functions and find the inverses of functions.
CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.
CC.2.2.HS.D.4 (Advanced)	Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs.
CC.2.2.HS.D.5 (Advanced)	Use polynomial identities to solve problems.
CC.2.2.HS.D.6 (Advanced)	Extend the knowledge of rational functions to rewrite in equivalent forms.
CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.

Topic: Lesson 1-2: Polynomials

Minutes for Topic: 80

Core Lesson Description: Identify, evaluate, add, and subtract polynomials.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Write polynomials in standard form and classify them based off of degree and number of terms

2) **(E)** Add and subtract polynomials

Topic: Lesson 3-4: Multiplying Polynomials

Minutes for Topic: 80

Core Lesson Description: Multiply polynomials and expand binomial expressions by using Pascal's Triangle.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Multiply polynomials

Topic: Lesson 5-7: Dividing Polynomials

Minutes for Topic: 120

Core Lesson Description: Use long division and synthetic division to divide polynomials.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Divide polynomials using Long Division

2) **(E)** Divide polynomials using Synthetic Division

Topic: Lesson 8-11: Factoring Polynomials

Minutes for Topic: 160

Core Lesson Description: Factor polynomials using difference of squares, difference of cubes, and sum of cubes.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Use the Factor Theorem to determine factors of a polynomial

2) **(E)** Factor the sum and difference of two cubes

Topic: Lesson 12-14: Review and Assessment

Minutes for Topic: 120

Core Lesson Description: Review the first 4 topics:

Classify polynomials and write them in standard form

Add, Subtract, Multiply, and Divide Polynomials

Factor polynomials to solve equations.

Topic: Lesson 15-18: Finding Real Roots of Polynomial Equations

Minutes for Topic: 160

Core Lesson Description: Use the Rational Root Theorem and the Irrational Root Theorem to solve polynomial equations.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Identify the multiplicity of a root

2) **(E)** Use the rational root theorem and irrational root theorem

Topic: Lesson 19-21: Fundamental Theorem of Algebra

Minutes for Topic: 120

Core Lesson Description: Use the Fundamental Theorem of Algebra and its corollary to write a polynomial equation of least degree with given roots.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Identify all of the roots of a polynomial

2) **(E)** Use the Fundamental Theorem of Algebra and its corollary

Topic: Lesson 22-24: Investigating Graphs of Polynomial Functions

Minutes for Topic: 120

Core Lesson Description: Use properties of end behavior to analyze, describe, and graph polynomial functions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Use properties of end behavior to analyze, describe, and graph polynomials

2) **(I)** Identify maxima and minima to graph polynomials

Topic: Lesson 25-28: Transforming Polynomial Functions

Minutes for Topic: 160

Core Lesson Description: Transform polynomial functions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Transform polynomial functions

Topic: Lesson 29-31: Review and Assessment

Minutes for Topic: 120

Core Lesson Description: Review of topics 5-8

Use Rational/Irrational Root Theorem to solve equations

Use Fundamental Theorem of Algebra to write a polynomial with the given roots

Identify behaviors of the graph of a polynomial

Transform polynomial functions

Topic: Lesson 32-36: Review and Assessment

Minutes for Topic: 200

Core Lesson Description: Review all topics from the unit

Unit: Unit 4: Rational and Radical Functions

Timeline: December to January

Month: February/March

Skills:

-Solve problems involving direct, inverse, joint, and combined variation

-Simplify rational expressions

-Multiply and divide rational expressions

-Add and subtract rational expressions

-Simplify complex fractions

-Transform rational functions using parent functions

-Graph rational functions

-Solve rational equations and inequalities

-Rewrite radical expressions using rational exponents

-Simplify and evaluate radical expressions and expressions containing rational exponents

-Graph radical functions and inequalities

-Transform radical functions using parent functions

-Solve radical equations and inequalities

Essential Questions: How do you solve and graph rational and radical equations?

Content:

- Solve direct, inverse, joint, and combined variation problems

- Simplify rational expressions

- Add, subtract, multiply, divide rational expressions

- Graph rational and radical functions

- Solve rational and radical equations and inequalities

Vocabulary:

-Direct Variation

-Constant of Variation

-Joint Variation

-Inverse Variation

-Combined Variation

-Rational Expression

-Complex Fraction

-Rational Function

-Discontinuous Function

-Continuous Function

-Hole (in a graph)

-Rational Equation

-Extraneous Solution

-Rational Inequality

-Index

-Rational Exponent

-Radical Function

-Square-Root Function

-Radical Equation

-Radical Inequality

Resources: Holt McDougal Algebra 2 Common Core Edition

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.1 (Advanced)	Apply and extend the properties of exponents to solve problems with rational exponents.
CC.2.1.HS.F.2 (Advanced)	Apply properties of rational and irrational numbers to solve real world or mathematical problems.
CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.
CC.2.2.HS.D.5 (Advanced)	Use polynomial identities to solve problems.
CC.2.2.HS.D.6 (Advanced)	Extend the knowledge of rational functions to rewrite in equivalent forms.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Topic: Lesson 1-2: Variation Functions

Minutes for Topic: 80

Core Lesson Description: Solve problems involving direct, inverse, joint, and combined variation.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Graph direct, inverse, joint, and combined variation functions

2) **(E)** Solve direct, inverse, joint, and combined variation functions

Topic: Lesson 3-5: Multiplying and Dividing Rational Expressions

Minutes for Topic: 120

Core Lesson Description: Simplify rational expressions by multiplying or dividing.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Simplify rational expressions

Topic: Lesson 6-8: Adding and Subtracting Rational Expressions

Minutes for Topic: 120

Core Lesson Description: Add and subtract rational expressions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Add and subtract rational expressions

2) **(E)** Simplify rational expressions by creating common denominators

Topic: Lesson 9-12: Rational Functions

Minutes for Topic: 160

Core Lesson Description: Transform rational functions and graph them based off of the transformations.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Graph rational functions

2) **(E)** Identify the transformations of a rational function and how it changes the parameters

Topic: Lesson 13-15: Solving Rational Equations and Inequalities

Minutes for Topic: 120

Core Lesson Description: Solve rational equations and inequalities.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Solve rational equations and inequalities

Topic: Lesson 16-17: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review the first 5 topics:

-Solve and graph variation functions

-Simplify rational expressions

-Adding and subtracting rational expressions

-Solving rational equations and inequalities

Topic: Lesson 18-19: Radical Expressions and Rational Exponents

Minutes for Topic: 80

Core Lesson Description: Rewrite radical expressions by using rational exponents.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Write radical expressions by using rational exponents

2) **(E)** Simplify and evaluate radical expression and expression with rational exponents

Topic: Lesson 20-22: Radical Functions

Minutes for Topic: 120

Core Lesson Description: Use transformations to graph radical functions and inequalities.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Identify the transformations and how it effects the parameters of the radical functions.

Topic: Lesson 23-25: Solving Radical Equations and Inequalilties

Minutes for Topic: 120

Core Lesson Description: Solve radical equations and inequalilties.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Solve radical equations

2) **(E)** Solve radical inequalities

Topic: Lesson 26-27: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review topics 6-8:

-Write radical expressions using radical exponents

-Graph radical functions and identify the domain and range

-Solve radical equations and inequalities

Topic: Lesson 28-30: Review and Assessment

Minutes for Topic: 120

Core Lesson Description: Review all topics from the unit

Unit: Unit 5: Probability

Month: March/April

Skills: -Find measures of central tendency and measures of variation for statistical data

-Examine effects of outliers

-Solve problems involving Fundamental Counting Principle, permutations, and combinations

-Find probability

-Find conditional probability

-Find the probability of compound events

-Construct and use two way tables

Essential Questions: How do you find the probability of specific events occurring?

Content: -Solve problems involving permutations and combinations

-Find the theoretical and experimental probability

-Find the probability of independent and dependent events

-Find the probability of compound events

Vocabulary: -Expected Value

-Probability Distribution

-Variance

-Standard Deviation

-Outlier

-Fundamental Counting Principle

-Permutation

-Factorial

-Combination

-Probability

-Outcome

-Sample Space

-Event

-Equally Likely Outcomes

-Favorable Outcomes

-Theoretical Probability

-Complement

-Geometric Probability

-Experiment

-Trial

-Experimental Probability

-Independent Events

-Dependent Events

-Conditional Probability

-Joint Relative Frequency

-Marginal Relative

-Frequency

-Conditional Relative

-Frequency

-Simple Event

-Compound Event

-Mutually Exclusive Events

-Inclusive Events

Resources: Holt McDougal Algebra 2 Common Core Edition

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.4.HS.B.1 (Advanced)	Summarize, represent, and interpret data on a single count or measurement variable.
CC.2.4.HS.B.2 (Advanced)	Summarize, represent, and interpret data on two categorical and quantitative variables.
CC.2.4.HS.B.6 (Advanced)	Use the concepts of independence and conditional probability to interpret data.
CC.2.4.HS.B.7 (Advanced)	Apply the rules of probability to compute probabilities of compound events in a uniform probability model.

Topic: Lessons 1-2: Measures of Central Tendency and Variation

Minutes for Topic: 80

Core Lesson Description: Find the measures of central tendency and measures of variation and examine the statistical data.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Find measures of central tendency and measures of variation

2) **(I)** Examine the effects of outliers on the data

Topic: Lessons 3-4: Permutations and Combinations

Minutes for Topic: 80

Core Lesson Description: Find the probability of an event using combinations and permutations

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Solve the problems involving the Fundamental Counting Principle

2) **(E)** Solve problems involving permutations and combinations

Topic: Lessons 5-7: Theoretical and Experimental Probability

Minutes for Topic: 120

Core Lesson Description: Determine what the theoretical and experimental probability of an event is.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Find the theoretical probability of an event

2) **(E)** Find the experimental probability of an event

Topic: Lessons 8-10: Independent and Dependent Events

Minutes for Topic: 120

Core Lesson Description: Find the probability of dependent and independent events.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Determine whether events are independent or dependent

2) **(E)** Find the probability of independent and dependent events

Topic: Lessons 11-13: Two-Way Tables

Minutes for Topic: 120

Core Lesson Description: Construct and interpret two-way frequency tables.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Construct a two-way table

2) **(I)** Interpret two-way frequency tables

Topic: 14-16: Compound Events

Minutes for Topic: 120

Core Lesson Description: Find the probability of mutually exclusive events and inclusive events.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(E)** Find the probability of mutually exclusive events

2) **(E)** Find the probability of inclusive events

Topic: Lessons 17-18: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review all topics from the unit

Unit: Unit 6: Exponential Functions and Logarithms

Month: April/May

Skills:

-Graph and recognize the inverses of relations and functions

-Find inverses of functions

-Determine whether the inverse of a function is a function

-Write and evaluate exponential expressions to model growth and decay situations

-Transform exponential functions

-Describe the effects of changes in the coefficients of exponential functions

-Write equivalent forms for exponential and logarithmic functions

-Use properties of logarithms to simlify

-Solve exponential and logarithmic equations and inequalities

Essential Questions:

How do you use exponential and logarithmic functions to solve real-world problems?

Content:

-Use exponential functions to model growth and decay

-Graph and write inverses of functions

-Use properties of logarithms to simplify expressions

-Solve exponential and logarithmic equations and inequalities

Vocabulary:

-Exponential Function

-Base

-Asymptote

-Exponential Growth

-Exponential Decay

-Inverse Relation

-Inverse Function

-Logarithm

-Common Logarithm

-Logarithmic Function

-Exponential Equation

-Logarithmic Equation

Resources:

Holt McDougal Algebra 2 Common Core Edition

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.

Topic: Lesson 1-4: Exponential Functions, Growth, and Decay

Minutes for Topic: 160

Core Lesson Description: Write and evaluate exponential expressions to model growth and decay situations.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Write exponential expressions to model growth and decay

2) **(I)** Evaluate exponential expressions to model growth and decay

Topic: Lesson 5-8: Inverses of Relations and Functions

Minutes for Topic: 160

Core Lesson Description: Graph and recognize inverses of relations and functions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(I)** Graph inverses of relations and functions

2) **(I)** Find the inverse of functions

Topic: Lesson 9-12: Logarithmic Functions

Minutes for Topic: 160

Core Lesson Description: Write equivalent forms for exponential and logarithmic functions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(C)** Write equivalent forms for exponential logarithmic functions

2) **(C)** Write, evaluate, and graph logarithmic functions

Topic: Lesson 13-17: Properties of Logarithms

Minutes for Topic: 200

Core Lesson Description: Use properties to simplify logarithmic expressions.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(C)** Simplify logarithmic expressions

2) **(C)** Translate between logarithms in any base

Topic: Lesson 18-21: Exponential and Logarithmic Equations and Inequalities

Minutes for Topic: 160

Core Lesson Description: Solve exponential and logarithmic equations and inequalities.

Core Lesson Student Learning Objectives: Students will be able to:

1) **(C)** Solve exponential and logarithmic equations

2) **(C)** Solve exponential and logarithmic inequalities

Topic: Lesson 22-23: Review and Assessment

Minutes for Topic: 80

Core Lesson Description: Review the first 4 topics:

-Use exponential functions to represent growth and decay

-Find the inverses of relations and functions

-Write and evaluate logarithmic functions

-Use properties of logarithms to simplify expressions